

What is claimed is:

1. A lens barrel comprising:
 - a holder which holds an image pick-up device;
 - a stationary barrel which includes a female helicoid formed on an inner peripheral surface thereof;
 - 5 a gear/helicoid ring which includes an annular rib formed on outer peripheral surface of said gear/helicoid ring at a rear end thereof, a male helicoid formed on said annular rib and engaged with said female helicoid of said stationary barrel, and a spur gear, wherein teeth 10 of said spur gear are formed on each thread of said male helicoid; and
 - 15 a driving pinion which is engaged with said spur gear;
- wherein a rotation of said gear/helicoid ring via rotation of said pinion causes said lens group to move along said optical axis,
- 20 wherein at least a portion of a rear end of said male helicoid, on threads of which said teeth of said spur gear are formed, extends rearwards to serve as a rear extension portion, and
- 25 wherein at least a portion of said rear extension portion overlaps said holder in said optical axis direction when said gear/helicoid ring firstly retracts while rotating, and subsequently stops retracting at a

predetermined position.

2. The lens barrel according to claim 1,
wherein one of opposite end surfaces of said rear
extension portion in a circumferential direction of said
5 gear/helicoid ring extends obliquely rearwards on an
extension of a root between two adjacent threads of said
male helicoid, and

wherein the other of said opposite end surfaces
of said rear extension portion extends parallel to said
10 teeth of said spur gear.

3. The lens barrel according to claim 1,
wherein a cutout portion is formed on said holder so that
a surface of said rear extension portion comes into
contact with one of opposite edges of said cut out portion
15 of said holder in a circumferential direction of said
holder in the case where said gear/helicoid ring
accidentally retracts beyond said predetermined
position.

4. The lens barrel according to claim 1,
20 further comprising a moving ring which supports said lens
group and includes at least one cam follower,

wherein at least one cam groove in which said cam
follower is engaged is formed on said gear/helicoid ring.

5. The lens barrel according to claim 1,
25 wherein said holder is fixed to a rear end surface of

said stationary barrel.

6. The lens barrel according to claim 1,
wherein said pinion is elongated in a direction parallel
to said optical axis.

5 7. The lens barrel according to claim 4,
wherein said moving ring is linearly guided along said
optical axis without rotating.

8. The lens barrel according to claim 1,
wherein said lens barrel comprises a zoom lens barrel;
10 and

wherein said lens group comprises a focal length varying
lens group.

9. The lens barrel according to claim 1,
further comprising:

15 a linear guide ring provided around said
gear/helicoid ring, and linearly guided along an optical
axis without rotating, said linear guide ring guiding
at least one lens group along said optical axis;

20 a circumferential groove which is formed on an
outer peripheral surface of said gear/helicoid ring
adjacent to and in front of said annular rib; and

25 a plurality of bayonet lugs which project from a
rear end of said linear guide ring to be engaged in said
circumferential groove so that said gear/helicoid ring
and said linear guide ring move together in said optical

axis direction while allowing said gear/helicoid ring to rotate freely relative to said linear guide ring.

10. A lens barrel comprising:

a stationary barrel which includes a female
5 helicoid formed on an inner peripheral surface thereof;

10 a gear/helicoid ring which includes an annular rib formed on outer peripheral surface of said gear/helicoid ring at a rear end thereof, a male helicoid formed on said annular rib and engaged with said female helicoid of said stationary barrel, and a spur gear, wherein teeth of said spur gear are formed on each thread of said male helicoid;

15 a pinion driven at a fixed position, and engaged with said spur gear;

a linear guide ring provided around said gear/helicoid ring, and linearly guided along an optical axis without rotating;

20 a circumferential groove which is formed on an outer peripheral surface of said gear/helicoid ring immediately in front of said annular rib; and

25 a plurality of bayonet lugs which project from a rear end of said linear guide ring to be engaged in said circumferential groove so that said gear/helicoid ring and said linear guide ring move together in said optical axis direction while allowing said gear/helicoid ring

to rotate freely relative to said linear guide ring,
wherein a rotation of said gear/helicoid ring via
rotation of said pinion causes at least one lens group,
which is linearly guided along said optical axis via said
5 linear guide ring, to move along said optical axis,

wherein a cutout portion is formed on a rear end
of said annular rib wherein a rear end of at least one
thread of said male helicoid is cut out along both a root
between two adjacent threads of said male helicoid and
10 a root between two adjacent teeth of said spur gear, and

wherein an element of said lens barrel enters said
cutout portion when said gear/helicoid ring retracts to
a rear moving limit thereof.

11. The lens barrel according to claim 9,
15 further comprising a holder which holds an image pick-up
device and includes a stop projection,

wherein said rear moving limit of said
gear/helicoid ring is determined by engagement of said
stop projection with a stop surface which is formed on
20 said annular rib in said cutout portion to extend along
said root between two adjacent teeth of said spur gear.

12. The lens barrel according to claim 9,
further comprising a moving ring which supports said lens
group and includes at least one cam follower,

25 wherein at least one cam groove in which said cam

follower is engaged is formed on said gear/helicoid ring.

13. The lens barrel according to claim 9, wherein said holder is fixed to a rear end surface of said stationary barrel.

5 14. The lens barrel according to claim 9, wherein said pinion is elongated in a direction parallel to said optical axis.

10 15. The lens barrel according to claim 11, wherein said moving ring is linearly guided along said optical axis without rotating.

16. The lens barrel according to claim 9, wherein said lens barrel comprises a zoom lens barrel; and

15 wherein said lens group comprises a focal length varying lens group.

17. The lens barrel according to claim 10, further comprising:

a linear guide ring provided around said gear/helicoid ring, and linearly guided along an optical axis without rotating, said linear guide ring guiding at least one lens group along said optical axis;

a circumferential groove which is formed on an outer peripheral surface of said gear/helicoid ring adjacent to and in front of said annular rib; and

25 a plurality of bayonet lugs which project from a

rear end of said linear guide ring to be engaged in said circumferential groove so that said gear/helicoid ring and said linear guide ring move together in said optical axis direction while allowing said gear/helicoid ring
5 to rotate freely relative to said linear guide ring.